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U.S. Department of Commerce  
Economics and Statistics  
Attn: Elizabeth "E.R." Anderson  
14<sup>th</sup> Street & Pennsylvania Ave. NW  
Washington, D.C. 20230

via e-mail: [innovationmetrics@doc.gov](mailto:innovationmetrics@doc.gov)

Re: Comments Regarding Innovation Metrics

The Association for Competitive Technology ("ACT") is pleased to respond to the Department of Commerce's request for comment on the growing need to measure innovation.

ACT is a nonprofit trade association representing nearly 3,000 businesses and professionals in the information technology ("IT") industry. While ACT's membership includes some large multinational companies, most of its members are small and medium-sized enterprises. ACT's members compete in a global marketplace by offering innovative products and services that are better, faster, and less expensive than yesterday's market-leading solutions.

The subject of the attached comment is to propose a complimentary approach toward measuring innovation—evaluating the innovation *ecosystem*. ACT believes that if the U.S. is to sustain its prosperity in the face of global competition, we must get serious about addressing the ways that regulatory policies impact the environment that produces innovation.

We describe three federal regulatory areas that significantly affect the innovation ecosystem:

1. Intellectual Property
2. Antitrust and Competition Law
3. International Trade

Our comments are based on a larger report published by ACT and available here <http://www.actonline.org/documents/070207-ACT-Innovation-Report.pdf>

Sincerely,

Braden Cox  
Research & Policy Counsel  
Association for Competitive Technology

**COMMENTS  
OF THE  
ASSOCIATION FOR COMPETITIVE TECHNOLOGY  
ON  
INNOVATION METRICS  
BEFORE THE  
DEPARTMENT OF COMMERCE**

The Association for Competitive Technology (“ACT”) is pleased to submit the following views in response to the Commerce Department’s request for public comment on the growing need for measuring and benchmarking innovation to better inform policy decisions that impact the U.S. economy.

ACT believes that while innovation is difficult to both define and measure, a growing body of literature shows how public policies can help or hurt innovative output. Innovation—no matter how it is measured—is the result of a complex ecosystem defined by intellectual property, labor, financial, immigration, education, antitrust and trade policies. Therefore it is imperative that when developing better ways to quantify innovation in the marketplace, we must also focus on ways to measure the impact that regulatory policies have on innovation.

The characteristics of innovation are many, and it can be difficult determine what is or is not “innovative.” The subject of this comment is to propose a complimentary approach toward measuring innovation—evaluating the innovation *ecosystem*. ACT believes that if the U.S. is to sustain its prosperity in the face of global competition, we must get serious about addressing the ways that regulatory policies impact the environment that produces innovation.

**I. Innovation Occurs in Ecosystems**

Innovation occurs more frequently in nations that provide institutional systems conducive for business formation and economic growth—or in other words, *create a fertile regulatory climate, and innovative seeds can grow*. Required institutional structures include enforceable property rights, efficient banking and financial systems, and a reliable legal framework for resolving disputes.

While these foundational structures are necessary preconditions for innovation, they are not in themselves sufficient. Rather, a complex variety of economic, legal and societal inputs—an “ecosystem”—allows innovation to blossom.

An “ecosystem” is commonly defined as a system formed when communities interact with their physical environment.<sup>1</sup> An “innovation ecosystem” relies on environmental inputs such as financial, human and physical capital. National policies that affect these inputs provide the basis for innovative regions, cities, and city clusters.<sup>2</sup>

Clayton Christensen first coined the term “disruptive technology” in his book, *The Innovator's Dilemma*. However, in his sequel, *The Innovator's Solution*, he replaced “disruptive technology” with the term “disruptive innovation.”<sup>3</sup> Christensen recognized that few technologies are intrinsically disruptive. Rather, it is the overall business climate for transforming seed ideas into profitable enterprises that enables the disruptive impact of particular innovations.

But there is more than just the overall business climate that affects innovation. As the product of a complex ecosystem, innovation relies on numerous cultural, economic, and legal factors. A proper understanding of an innovative ecosystem takes into account the various aspects of competitiveness—at the global, national and local level.

#### **A. Innovation is Born Locally, even if it's Borne Globally**

Global companies and economies work in local competition and within global structures—sometimes called “glocalization.”<sup>4</sup> A multifaceted mix of local and national policies creates ecosystems that enable innovators to create locally and compete globally.

New York Times reporter Thomas Friedman writes about competition at the global level. In his book, *The World Is Flat: A Brief History of the Twenty-first Century*, Friedman says that national boundaries do not matter as much in a “flat”—or connected—world.<sup>5</sup> Economist Richard Florida, in *Cities and the Creative Class*, calls cities the “cauldrons of creativity” and writes about competitiveness at the local level.<sup>6</sup> He analyzes why certain cities become innovation centers.<sup>7</sup>

According to Thomas Friedman, “[i]n a flat world, you can innovate without having to emigrate.”<sup>8</sup> Friedman suggests that there is a *global* innovation ecosystem, where entrepreneurs can plug into the world economy from any location. Technological advances and decreased trade barriers have made it possible to do business across the planet.<sup>9</sup>

Friedman is correct about how products are borne—or produced and delivered—worldwide. The world may be flat for distribution and offshore production, as globalization creates one market for goods and services. But *local* environments matter for the hatching of innovation. Far from being flat, certain regions and cities appear as economic mountains with spikes in innovation creation.

Harvard professor Michael E. Porter highlighted the importance of “clusters”—geographic areas with competitive success in particular fields—for global competition. In his book *The Competitive Advantage of Nations*, Porter asserts that local knowledge centers are a vital source of competitive advantage for advanced and emerging countries.<sup>10</sup> Prominent economic geographer Michael Storper similarly articulates the importance that regions continue to play even in a global age in *The Regional World*.<sup>11</sup>

Building upon this and other research, economist Richard Florida at George Mason University reveals that “[b]ecause globalization has increased the returns to innovation, by allowing innovative products and services to quickly reach consumers worldwide, it has strengthened the lure that innovation centers hold for our planet’s best and brightest, reinforcing the spikiness of wealth and economic production.”<sup>12</sup>

He further states that only a select group of cities or large population centers—a megalopolis—dominates global innovation:

The global economy takes shape around perhaps 20 great Megas—half in the United States and the rest scattered throughout the world. These regions are home to just 10 percent of total world population, 660 million people, but produce half of all economic activity, two thirds of world-class scientific activity and three quarters of global innovations.<sup>13</sup>

Florida's point is not to focus on large urban areas, but to highlight *innovative* metropolitan areas. According to Florida, innovative areas include such cities as Tokyo, Seoul, New York, San Francisco and the Silicon Valley area, Boston, Seattle, and Toronto.<sup>14</sup> These metros share similar characteristics, including a well-educated and diverse workforce and many firms that pursue patents for their inventions.

These cities compete against one another by attracting more educated professionals. Florida even asserts that—at least in the U.S.—the educated elite are clustering in a few cities and leaving the rest of the country behind.<sup>15</sup> Extrapolated globally, geographic differences in workforce skills and other innovation inputs will require the physical migration of innovators so that they can compete and succeed. One study shows that in 25% of technology and engineering companies started in the U.S. from 1995 to 2005, at least one key founder was foreign-born.<sup>16</sup> Another study of Silicon Valley startups in the late 1990s found that one-quarter had Chinese or Indian executives.<sup>17</sup>

## **B. Essential Ingredients that *Enable & Support* Innovation**

It's a simple precept: people innovate, and people naturally respond to incentives and rewards structures. As local, national and even international makers of policy, governments play a key role for implementing policies that create incentives for people to innovate.

History is replete with economic systems—from feudalism to mercantilism to socialism—that fortify economic power in the hands of a vested few. Highly regulated economies often shield producers and middlemen from change, creating a system that discourages innovation.

Indeed, government policies can influence innovation in positive or negative ways. Laws that restrict market adaptation and flexibility create obstacles for innovation. However, regulations that provide incentives for the creation of new products and services and allow for flexible labor practices help promote an innovative ecosystem.

The following table lists policy areas that are essential ingredients for innovative ecosystems:

<b><u>Ingredient</u></b>	<b><u>National Policies</u></b>	<b><u>Local Practices</u></b>
Antitrust & Competition Regulation	Single-firm behavior, product integration and merger review	<i>National—not local</i>
Education	Federal spending and standards settings	K-12 and universities educate a local workforce and serve as research hubs
Finance	Banking and securities law	Networks for venture funding
Immigration	Visas and citizenship rules affect how foreign talent can emigrate	Cities can attract and cultivate immigrant communities

Intellectual Property	Patents, copyrights and trade secrets protect economic returns on investment	<i>National—not local</i>
International Trade	Tariffs, quotas and subsidies harm global sales of innovative products	<i>National—not local</i>
Labor	Labor union and anti-discrimination rules apply nationally and should be flexible to react to economic change	Skills and wages are locally determined; worker retraining programs
Taxes	Income and capital gains taxes and R&D credits affect returns on investment	Income and sales taxes, along with R&D credits can affect where companies locate

As the table shows, both national and local policies influence innovative environments. Moreover, education is mostly a local issue in the U.S., and city and state policies significantly impact the performance of grade schools and universities. Furthermore, cities can implement initiatives that complement national policy areas. While immigration laws are national, local communities can, through their own policies and ordinances, attract immigrants.

A few are almost entirely national in scope, including intellectual property and competition regulation. For the most part, it “takes a *nation*”—not cities—to provide incentives for intellectual property, regulate antitrust and competition, and set rules for international trade.

## II. National Policies Cultivate Innovation Ecosystems

This section discusses certain national policies that *enable* countries to participate in the global economy and cities to become innovation centers. In this regard, global and local innovation depends on a favorable national legal and regulatory regime that provides the essential ingredients for innovation ecosystems.

Countries use laws and regulations to enhance or constrain business investment, productivity, and growth. A generation ago, the per capita gross domestic product (GDP) of North and South Korea was roughly the same. Then North Korea opted for a centrally planned economy that is closed and inflexible, while South Korea pursued policies that were open, externally focused, and adaptable. Today, South Korea’s per capita GDP is 12 times that of North Korea.<sup>18</sup>

National policies set the foundation for ecosystems that support innovation. Cities and regions can only do so much on their own to attract creative talent and upstart businesses. Underlying institutions that promote research and development, protect intellectual property rights, engage in sensible competition policy, and reduce trade barriers provide the plateau from which innovative cities spike and global companies compete.

Intellectual property rights, competition law, and international trade stand out among national policies that provide incentives for and have an effect on innovation.

Intellectual property protections encourage innovation by allowing innovators to reap the value of their efforts. Antitrust and competition law that recognizes the various ways innovation occurs—particularly the integration of innovations—is vital for the introduction of new products and business models. International trade increases the available market for innovative products.

#### **A. Protecting Economic Investment in Intellectual Property**

Intellectual property is equally important to entrepreneurs and established firms on the cutting edge of technological innovation. Among intellectual property rights, patents are particularly effective in helping firms—especially startup businesses—raise capital for research and development and protect their inventions from imitators.<sup>19</sup>

There were almost 50 percent more patents granted by the U.S. Patent Office in 2005 than were granted in 1992.<sup>20</sup> As much as three-quarters of the value of publicly traded companies in America comes from intangible assets, up from around 40 percent in the early 1980s.<sup>21</sup> Furthermore, intellectual property is the only area in which the U.S. runs a global trade surplus—in 2003, U.S. trade in intellectual property produced a surplus of \$28.2 billion.<sup>22</sup>

Strong intellectual property protection, while vital for the U.S., is just as important for any nation that wants to compete in the global economy. The World Economic Forum's GCI indicates a correlation between the protection of intellectual property rights and national competitiveness. In 2004, the 20 countries that were perceived as having the most stringent intellectual property protection were classed among the top 27 in the GCI.<sup>23</sup> Conversely, the 20 countries perceived as having the weakest intellectual property regimes were ranked among the bottom 36 for growth and competitiveness.<sup>24</sup>

Nations that want to grow their economies are embracing ways to incentivize intellectual property creation. China serves as one example where policymakers are embracing IP to increase their domestic economy. According to Federal Reserve Chairman Ben Bernanke, "small- and medium-sized enterprises are emerging as an engine of job creation in China—as they are in the United States—even as they promote innovation and help to create a more dynamic and diversified economy."<sup>25</sup>

By 2010, home-grown innovations will make up 20 percent of China's total export volume for mechanical and electronics products, according to a recent statement by Chinese Vice Minister of Commerce Wei Jianguo.<sup>26</sup> The Chinese Ministry of Commerce has made "rejuvenating trade with science and technology" a priority, said Wang Qinhua, a ministry director.<sup>27</sup> The Chinese government also has set aside \$62 million to support domestic industrial innovations. Government efforts to encourage innovation eventually will result in 160 new proprietary products ranging from electronics to biotechnology, according to the country's Ministry of Science and Technology.<sup>28</sup>

#### **B. Competition Rules Shouldn't Impede Innovation**

Government policy initiatives can help promote—or deter—innovation. The best way to achieve a healthy technology environment is to foster market mechanisms that promote competition, investment and innovation. The proper development and application of antitrust laws are vital to this goal.

However, while the ideals of antitrust regulation are appealing, its reduction to practice can be a costly endeavor. Antitrust law sometimes does more harm than good, prompting one commentator to say that “in their static way, [antitrust laws] ban activities for which officials and scholars have not yet discovered the rationale; markets are more dynamic than that.”<sup>29</sup> In particular, antitrust law can impede innovation through restrictions on tying, especially when applied to the integration of features.<sup>30</sup>

Feature integration is an essential way to improve products and motivate existing consumers to upgrade. In *Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution*, Geoffrey Moore asserts that companies create competitive advantages through what he terms “integration innovation.”<sup>31</sup> According to Moore, integration innovation “reduces the customer’s cost of maintaining a complex operation by integrating its many disparate elements into a single centrally managed system.”<sup>32</sup>

Antitrust law generally forbids companies with dominant market power in one product (the tying product) from requiring buyers to accept a second product (the tied product) as a condition of sale or lease. The antitrust goal is to prevent monopoly abuse and market foreclosure. The fear is that a firm with market power in one market will leverage this power into another market where it is not dominant in order to foreclose the market to its competitors.

However, product integration can increase consumer welfare by adding functionality, and is often the result of—not a hindrance to—market competition.<sup>33</sup> Moreover, antitrust law has difficulties in dealing with tying arrangements. If product integrations reduce price or improve quality of service for the consumer, it can be pro-competitive even if the tie harms competitors. Harm to competitors is not the same as harm to consumers, the latter being the concern for U.S. antitrust law.

Given that so much innovation occurs through feature integration, antitrust regulators must not presume that product integration amounts to tying that is *per se* illegal. Rather, policymakers should embrace an approach that considers the pro-consumer and pro-competitive effects of product integration.

A growing proliferation of antitrust laws globally threatens innovative environments, and rules about tying should be harmonized. In a flat world, products are quickly distributed across the globe, but interventionist enforcement actions by antitrust regulators threaten to penalize innovation integration in some countries.

### **C. Reducing Barriers to International Trade**

The third category of these nationally-implemented regulatory policies regards barriers to international trade. International trade helps promote innovation by increasing competition and allowing for better access to export markets.

The free trade principles espoused by Adam Smith and David Ricardo in the 18<sup>th</sup> and 19<sup>th</sup> centuries remain true today.<sup>34</sup> Nations that open up their markets to the forces of competition will see greater productivity and better products. The stronger the competition—whether it is domestic or international—the more innovation that will occur within a country’s economy.

In a Brookings paper, Jeffrey Sachs and Andrew Warner demonstrate that countries more open to trade tend to experience the highest rates of economic growth. Their study finds that during the 1970s and 1980s, developed economies with relatively open trade borders grew by 2.3 percent per year, compared to a 0.7 percent growth rate for closed economies.<sup>35</sup> The results for developing countries were even more dramatic: Closed economies grew by 0.7 percent whereas developing countries with open economies recorded an average annual growth rate of 4.5 percent.<sup>36</sup>

Conversely, tariffs, import quotas and subsidies carry costs that can constrain innovation. These policies discourage firms and even entire industries from adapting to the challenge of foreign competition. As a result, these industries have less incentive to improve their operations and eventually become increasingly dependent on government support for their survival.

However, exposing national industries to global competition can often be disruptive. Domestic companies can begin to perform poorly and be forced to cut jobs. There will be significant pressure to protect these companies—but doing so slows the rate of innovation. Instead, policymakers can implement programs that will retrain workers with more productive and competitive skill sets.<sup>37</sup>

International trade provides access to export markets, which also creates incentives for innovation and technological progress. Open, market-based trade increases the size of a nation's market and thus its potential reward for innovation. As the economies of developing countries like China and India open, their huge populations draw the attention of profit-motivated innovators and entrepreneurs.

In addition, partnership opportunities with international companies allow for the diffusion of knowledge and skills required for innovative breakthroughs. Companies that invest in research and development need access to advanced tools, software and services. If barriers restrict the import of these innovation inputs, R&D will be less productive.

International trade is not limited to only large multinational corporations. The known export revenue of U.S.-based small and medium-sized enterprises rose from \$102.8 billion in 1992 to \$203.0 billion in 2004, and SMEs were responsible for 28.6 percent of goods exports in 2004.<sup>38</sup>

International trade encompasses more than just pure economics and is increasingly about domestic policy-making. Many issues are often covered by trade negotiations, including intellectual property and competition policy. A world market increases business opportunities, but innovation potential will ultimately be limited by the legal system of foreign markets. Nations that fail to protect intellectual property will see less foreign trade and investment.

*The truth of our age is this - and must be this: Open and competitive commerce will enrich us as a nation. It spurs us to innovate. It forces us to compete. It connects us with new customers. It promotes global growth, without which no rich country can hope to grow wealthier. It enables our producers, who are themselves consumers of services and raw materials, to prosper. And so, I say to you in the face of all the pressures to do the reverse, we must compete, not retreat.*

- President Bill Clinton,  
Address at American University,  
Washington, DC



### III. Conclusion

It is imperative that when developing better ways to quantify innovation in the marketplace, we must also focus on ways to measure the impact that regulatory policies have on innovation.

Although innovation occurs throughout the world, the rate of innovation differs dramatically among countries. The reasons for this disparity are apparent enough—nations have their own ideas about regulatory policies, including trade policy, intellectual property, and competition regulation. These laws can either enhance or restrict incentives for innovation.

The U.S. is far from perfect in the way it regulates industries—it does not rank at the top of major indices that rate economic freedoms and the ease of doing business. Yet the U.S. is the recognized world leader in innovation. This is due to a confluence of factors that—as the economy becomes more global—other nations are seeking to replicate.

Measuring innovation is complex. Innovation occurs in many forms, including business models, products and services, and supply chains. Adaptability is an important aspect to innovation—flexible labor markets and streamlined rules for legal immigration help innovation to flourish. In addition, an educated workforce, low taxes, strong intellectual property laws, and funding sources for startup businesses all contribute to successful economies.

The characteristics of innovation are many, and it can be difficult determine what is or is not “innovative.” But try we must, and in addition to measuring innovation, we should also focus on evaluating the innovation *ecosystem*. We know that regulatory policies impact the environment that produces innovation—and better firm-specific and economy-wide data will help reveal the consequences of regulatory action.

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<sup>3</sup> Clayton Christensen, The Innovator's Solution: Creating and Sustaining Successful Growth, Harvard Business School Press, 2003.

<sup>4</sup> See Roland Robertson, Globalization: Social Theory and Global Culture, Sage Pubns, 1992.

<sup>5</sup> Thomas L. Friedman, The World Is Flat: A Brief History of the Twenty-first Century, Farrar, Straus and Giroux, 2005.

<sup>6</sup> Richard Florida, Cities and the Creative Class, Routledge, 2005.

<sup>7</sup> For more research about innovative metropolitan areas, see Robert D. Atkinson and Paul D. Gottlieb, “The Metropolitan New Economy Index”, Progressive Policy Institute, April 2001, available at [http://www.neweconomyindex.org/metro/index.html#Introductory\\_Text](http://www.neweconomyindex.org/metro/index.html#Introductory_Text).

<sup>8</sup> Thomas L. Friedman, as quoted in Richard Florida, “The World is Spiky”, The Atlantic Monthly, October 2005, available at <http://www.creativeclass.org/acrobat/TheWorldIsSpiky.pdf>.

<sup>9</sup> Advanced telecommunications technology has interconnected distant countries and made possible the globalization of commerce and manufacturing. See Manuel Castells, The Rise of the Network Society, Blackwell Publishing Professional, 2000.

<sup>10</sup> Michael Porter, The Competitive Advantage of Nations, Free Press, 1990. For an interview with Porter about the subject, see <http://hbswk.hbs.edu/item/3329.html>.

<sup>11</sup> Michael Storper, The Regional World: Territorial Development in a Global Economy, Guilford Publications, 1998.

<sup>12</sup> Richard Florida, “The World is Spiky”, The Atlantic Monthly, October 2005, available at <http://www.creativeclass.org/acrobat/TheWorldIsSpiky.pdf>.

<sup>13</sup> Richard Florida, “The New Megalopolis”, Newsweek, July 3-10, 2006, available at <http://www.msnbc.msn.com/id/13528839/site/newsweek/>.

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- <sup>27</sup> Ibid.
- <sup>28</sup> Ibid.
- <sup>29</sup> Fred Smith, "Why Not Abolish Antitrust?" *Regulation*, January-February 1983.
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